

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(SUPPLEMENTARY SHEET)

International File No. PCT/DE2004/002372

Point V.

1. Related art

Reference is made to the following documents in the present opinion:

D1 = US-A-4,378,701 (MOUNTAIN ET AL) April 5, 1983 (1983-04-05)

D2 = US-A-4,446,723 (BOENING ET AL) May 8, 1984 (1984-05-08)

D3 = EP-A-0 409 166 (NIPPON MINING COMPANY LIMITED; JAPAN ENERGY CORPORATION) January 23, 1991 (1991-01-23)

2. Novelty (Article 33 (1), (2) PCT)

2.1. Document D1 (see the citations and figures cited in the International Search Report, for example) is considered the most proximate related art in relation to the object of independent Claim 1. It discloses (the references in parentheses relate to this document) a pressure sensor (see, for example, column 1, lines 55-57: "In a special case, in which the object is hollow, the stress may be produced by internal hydraulic or pneumatic pressure"). Tensions induced through pressure and therefore, at least indirectly, the pressure causing these tensions are thus determined by the sensor disclosed in Document D1 (see, for example, column 3, lines 46-51). Furthermore, the sensor includes a hollow vessel in its interior, to which pressure is applied, and which is designed so it is differently deformable or locally changeable through

pressure differences, the surface of the hollow vessel being designed in such a way that the temperature changes caused by the pressure changes may be measured using an infrared detection system 13 (see, for example, column 3, lines 9-18; column 4, lines 34-46).

2.2. The object of single independent Claim 1 therefore differs from the known pressure sensor in that a diaphragm is used for pressure measurement instead of a hollow vessel.

2.3. Therefore, Claim 1 and Claims 2 through 11, which are dependent thereon, are novel.

3. Inventive step (Article 33 (1), (3) PCT)

3.1. The object to be achieved by the present invention may therefore be considered to be to provide an alternative to the pressure sensor disclosed in Document D1.

3.2. The achievement of the object suggested in Claim 1 of the present application cannot be considered as inventive for the following reasons (Article 33 (3) PCT):

Using diaphragms which are designed so that their deformation caused by a pressure acting thereon and therefore the pressure may be measured is generally known in the field of pressure measurement.

The selection of a diaphragm instead of a hollow vessel is therefore only one of multiple obvious possibilities from which those skilled in the art would select without inventive activity in accordance with the circumstances in order to achieve the stated object.

3.3. The features of independent Claims 4 through 10 relate to slight technical embodiments **[sic; alterations]** of the object of the claims on which they are based, which are

within the scope of what one skilled in the art would do because of routine considerations, especially since the advantages to be achieved therewith are obvious in advance.

Infrared detectors and their design, as well as associated infrared conductors, lens systems, filters, etc., are generally known (see, for example, Documents D1 through D3, e.g., the citations and figures cited in the International Search Report).

3.4. The special division of the diaphragm into a functional section and a surrounding section having reduced emissivity defined in Claims 2 and 3 is not obvious from any of the present documents. However, the reference of Claim 3 to Claim 1 is inconsistent pursuant to Article 6 PCT, since Claim 1 does not define a surrounding section. The positive evaluation of the inventive step of Claims 2 and 3 therefore only applies if the reference of Claim 3 to Claim 1 is ignored.

3.5. The object of Claim 11, relating to two infrared radiation sensors, upstream from which infrared filters of different spectral transparencies are positioned, is also not obvious from any of the available documents. However, Claim 11 does not fulfill the requirements of Article 6 PCT, because the object of the claimed protection is not clearly defined. In the claim, the attempt is made to define the object through the result to be achieved; however, only the object to be achieved is specified in this way, without offering the technical features required for achieving this result. This relates to the following features: "... the radiation components detected by the two infrared radiation sensors (4) are separated into the component originating from deflections

of the diaphragm (4) and the component originating from temperature changes of the diaphragm (4)".

4. Article 33 (1), (4) PCT (commercial applicability)

The present invention, as is defined in Claims 1 through 11, is doubtlessly commercially applicable, for example, for pressure measurement in combustion chambers of motor vehicles.